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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,373	12/03/2003	Jeffrey Schlom	38163-0197	5890

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OFFICE OF TECHNOLOGY TRANSFER
NATIONAL INSTITUTES OF HEALTH
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EXAMINER	
DIBRINO, MARIANNE NMN	
ART UNIT	**PAPER NUMBER**
1644	

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/725,373	SCHLOM ET AL	
	Examiner	Art Unit	
	DiBrino Marianne	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/21/06 & 5/22/06*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *47-54 and 56-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *47-54 and 56-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/21/06 has been entered.

Applicant's amendment filed 5/22/06 is acknowledged and has been entered.

2. Claims 47-54 and 56-59 read on the elected species SEQ ID NO: 2, and are presently being examined.

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the Examiner on form PTO-892, they have not been considered.

4. The incorporation of *essential* material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

The attempt to incorporate subject matter into the instant application by reference to foreign patents and non-published foreign patent applications on page 45 is improper because an application as filed must be complete in itself in order to comply with 35 USC 112. An application for a patent when filed may incorporate "essential material" by reference to (1) a US patent or (2) a US patent application publication, which patent or patent publication does not itself incorporate such essential material by reference. "Essential material" is defined as that which is necessary to (1) provide a written description of the claimed invention, and the manner and process of making and using it, in such full, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and set forth the best mode contemplated by the inventor of carrying out the invention, (2) describe the claimed invention in terms that particularly point out and distinctly claim the invention as required by the second paragraph of 35 USC 112, or (3) describe the

structure, material or acts that correspond to a claimed means or step for performing a specified function as required by the sixth paragraph of 35 USC 112. In any application which is to issue as a US patent, essential material may not be incorporated by reference to (1) patents or applications published by foreign countries or a regional patent office, (2) non-patent publications, (3) a US patent or application which itself incorporates "essential material" by reference, or (4) a foreign application. See *In re Fouche*, 439 F.2d 1237, 169 USPQ 429 (CCPA 1971).

Nonessential subject matter may be incorporated by reference to (1) patents or applications published by the US or foreign countries or regional patent offices, (2) prior and concurrently filed, commonly owned US applications, or (3) non-patent publications. Nonessential subject matter is subject matter referred to for purposes of indicating the background of the invention or illustrating the state of the art.

Applicant is invited to determine whether material incorporated by reference is essential or non-essential and amend the specification accordingly. (See MPEP 608.01(p)).

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 47-52, 54 and 56-59 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

The amendatory material that is not supported by the specification and claims as originally filed is as follows:

- A nucleic acid molecule encoding ***a*** CEA molecule consisting of an amino acid sequence that is one of SEQ ID NO: 2-5, vector, host cell and kit thereof,
- A composition comprising the nucleic acid molecule of claim 47.

Applicant does not point to support for the claim amendments.

7. Claims 47-54 and 56-59 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

The specification does not provide adequate written description of the claimed invention. The legal standard for sufficiency of a patent's (or a specification's) written description is whether that description "reasonably conveys to the artisan that the inventor had possession at that time of the. . .claimed subject matter", Vas-Cath, Inc. V. Mahurkar, 19 USPQ2d 1111 (Fed. Cir. 1991). In the instant case, the specification does not convey to the artisan that the Applicant had possession at the time of invention of the claimed nucleic acid molecule, vector, host cell and kit thereof recited in the instant claims 47-52, 56-58, kit comprising a vector comprising a nucleic acid comprising the nucleic acid sequence encoding SEQ ID NO: 2 recited in instant claim 54, and a kit comprising an agonist peptide and a vector comprising a gene encoding CEA or a recombinantly produced CEA protein recited in instant claim 53.

The instant claims encompass a nucleic acid molecule encoding a CEA molecule consisting of an amino acid sequence that is one of SEQ ID NO: 2-5, *i.e.,* a nucleic acid molecule encoding a *fragment* of one of SEQ ID NO: 2-5, vector, host cell and kit thereof (claims 47-52, 56-58), kit comprising a vector comprising a nucleic acid *comprising* the nucleic acid sequence encoding SEQ ID NO: 2 (claim 54), and a kit comprising any agonist peptide, not necessarily from CEA, and a vector comprising a gene encoding CEA *or a recombinantly produced CEA protein* (claim 53). There is insufficient disclosure in the specification on such an invention.

As to the issue of *comprises*, the specification does not disclose flanking sequences for SEQ ID NO: 2-5, nor what nucleic acid sequences would encode them. The specification likewise does not disclose nucleic acid molecules that encode a fragment of one of SEQ ID NO: 2-5. The specification does not disclose the definition of 'a CEA protein.' The specification discloses that the human CEA is a 180 kD glycoprotein expressed on the majority of colon, rectal, stomach and pancreatic tumors, some breast carcinomas, and a majority of lung carcinomas, in fetal gut tissue and to a lesser extent on normal colon epithelium.

The specification discloses that gene for the human CEA protein has been cloned, and references a non-patent literature reference and a foreign application (especially page 2 at lines 4-22). The disclosed use for the nucleic acid molecules is in cancer immunotherapy, by inducing a CTL immune response to CEA to the nucleic acid encoded agonist peptides SEQ ID NO: 2-5 (of parental peptide CAP-1 altered at non-MHC anchor residues) that will bind to HLA-A2 and elicit an immune response equal to or superior to the parental peptide (especially pages 6-8 at summary of the invention).

The art recognizes that for a peptide to be a T cell epitope, the length of the peptide is important for binding to HLA (along with the presence of anchor (or "motif") amino acid residues present within the peptide). The peptides that bind to class I molecules have a predominant length, *i.e.*, a minimum of 8 or 9 amino acid residues for a class I MHC restricted T cell epitope peptide. A primary factor for this is that amino acid residues at the amino- and carboxy-termini of peptides binding to class I molecules interact with conserved amino acid residues in pockets ("A","F") located at opposite ends of the binding groove of the class I molecule, giving rise to a common orientation of the peptides in the binding site (Engelhard at page 14, column 1, lines 16-27, of record.) Thus, the amino acid residues at the peptides' termini make a network of hydrogen bonds with conserved residues on the sides and bottom of the peptide binding groove of class I molecules. These interactions are important for holding the peptides in the binding groove and for stabilizing the complex (Guo, *et al* at page 366, column 1 lines 1-10, of record) "...the preferred length (of the peptide) is determined by the minimum amount of peptide required to span the center of the binding site and optimize the interactions at the ends" , but that the predominant length is 9 amino acid residues (Engelhard at page 14, column 1, lines 23-27). The minimum length for a peptide to be a T cell epitope for class II MHC is about 12 amino acid residues (Rammensee *et al* at page 181, column 2, first full paragraph, of record).

In addition, the art recognizes that flanking sequences influence the processing and presentation of CTL epitopes (Eisenlohr *et al*, Shastri *et al*, Bergmann *et al*, Wang *et al*, Perkins *et al*, Theoboald *et al* and Gileadi *et al*, all of record) and that immunodominance can be affected by the context of the epitope within the protein molecule and that junctional neoepitopes can be created (Perkins *et al*) or that immunodominant epitopes can be completely silenced by contiguous sequences (Wang *et al*).

The instant disclosure does not adequately describe the scope of the claimed genus, which encompasses a substantial variety of subgenera, including a kit comprising a vector comprising a nucleic acid molecule *comprising* the nucleic acid sequence encoding one of SEQ ID NO: 2-5, or a nucleic acid molecule/vector/host cell or kit thereof, encoding a CEA molecule consisting of an amino acid sequence of one of SEQ ID NO: 2-5, *i.e.*, a fragment, including wherein the fragment is capable of stimulating a CEA-specific CTL response in a subject, and a kit comprising an agonist peptide and a vector comprising a gene encoding CEA *or a recombinantly produced CEA protein.* Since the disclosure fails to provide sufficient relevant identifying characteristics, and because the genus is highly variant, one of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species to describe the genus as broadly claimed.

8. Claims 47-54 and 56 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a nucleic acid consisting of a nucleic acid sequence that encodes a polypeptide that consists of one of SEQ ID NO: 2-5 and vector/host cell/kit thereof/composition thereof, or a vector that in addition comprises a nucleotide sequence encoding at least one HLA class I molecule that is HLA-A2, does not reasonably provide enablement for the claimed nucleic acid molecule, vector, host cell and kit thereof recited in the instant claims (claims 47-52 and 56), kit comprising a vector comprising a nucleic acid comprising the nucleic acid sequence encoding SEQ ID NO: 2 (claim 54), and a kit comprising any agonist peptide and a vector comprising a gene encoding CEA or a recombinantly produced CEA protein (claim 53). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The specification has not enabled the breadth of the claimed invention because the claims encompass a nucleic acid molecule encoding *a* CEA molecule consisting of an amino acid sequence that is one of SEQ ID NO: 2-5, *i.e.*, a nucleic acid molecule encoding a *fragment* of one of SEQ ID NO: 2-5, vector, host cell and kit thereof (claims 47-52, 56-58), a kit comprising a vector comprising a nucleic acid *comprising* the nucleic acid sequence encoding SEQ ID NO: 2 (claim 54), and a kit comprising any agonist peptide, not necessarily from CEA, and a vector comprising a gene encoding CEA *or a recombinantly produced CEA protein* (claim 53). The state of the art is such that it is unpredictable in the absence of appropriate evidence whether the claimed nucleic acid molecules, vectors, host cells and kit thereof can be made and/or used.

As to the issue of *comprises*, the specification does not disclose flanking sequences for SEQ ID NO: 2-5. The specification likewise does not disclose nucleic acid molecules that encode a fragment of one of SEQ ID NO: 2-5. The specification does not disclose the definition of a CEA protein. The specification discloses human CEA is a 180 kD glycoprotein expressed on the majority of colon, rectal, stomach and pancreatic tumors, some breast carcinomas, and a majority of lung carcinomas, in fetal gut tissue and to a lesser extent on normal colon epithelium.

The specification discloses that gene for the human CEA protein has been cloned and references a non-patent literature reference and a foreign application (especially page 2 at lines 4-22). The disclosed use for the nucleic acid molecules is in cancer immunotherapy, by inducing a CTL immune response to CEA to the nucleic acid encoded agonist peptides SEQ ID NO: 2-5 (of parental peptide CAP-1 altered at non-MHC anchor residues) that will bind to HLA-A2 and elicit an immune response equal to or superior to the parental peptide (especially pages 6-8 at summary of the invention).

The specification provides no disclosure and it is unpredictable that peptides comprising SEQ ID NO: 2-5: (1) would be correctly processed and would bind to an MHC molecule when present in a longer peptide of unknown length and flanked by amino acid sequences not present in the antigenic protein of origin, (2) and would be recognized by CTL. The specification provides no disclosure and it is unpredictable that peptides consisting of fragments of SEQ ID NO: 2-5 would bind an MHC molecule at all.

The art recognizes that for a peptide to be a T cell epitope, the length of the peptide is important for binding to HLA (along with the presence of anchor (or "motif") amino acid residues present within the peptide). The peptides that bind to class I molecules have a predominant length, *i.e.,* a minimum of 8 or 9 amino acid residues for a class I MHC restricted T cell epitope peptide. A primary factor for this is that amino acid residues at the amino- and carboxy-termini of peptides binding to class I molecules interact with conserved amino acid residues in pockets ("A","F") located at opposite ends of the binding groove of the class I molecule, giving rise to a common orientation of the peptides in the binding site (Engelhard at page 14, column 1, lines 16-27, of record.) Thus, the amino acid residues at the peptides' termini make a network of hydrogen bonds with conserved residues on the sides and bottom of the peptide binding groove of class I molecules. These interactions are important for holding the peptides in the binding groove and for stabilizing the complex (Guo *et al* at page 366, column 1 lines 1-10, of record) "...the preferred length (of the peptide) is determined by the minimum amount of peptide required to span the center of the binding site and optimize the interactions at the ends," but that the predominant length is 9 amino acid residues (Engelhard at page 14, column 1, lines 23-27).

In addition, the art recognizes that flanking sequences influence the processing and presentation of CTL epitopes (Eisenlohr *et al*, Shastri *et al*, Bergmann *et al*, Wang *et al*, Perkins *et al*, Theoboald *et al* and Gileadi *et al*, all of record) and that immunodominance can be affected by the context of the epitope within the protein molecule and that junctional neoepitopes can be created (Perkins *et al*) or that immunodominant epitopes can be completely silenced by contiguous sequences (Wang *et al*). An undue amount of experimentation would be involved in determining longer peptides from the many possibilities that would be correctly processed, capable of binding to HLA and being recognized by CTL.

There is insufficient guidance in the specification as to how to make and/or use instant invention. Undue experimentation would be required of one skilled in the art to practice the instant invention. See In re Wands 8 USPQ2d 1400 (CAFC 1988).

9. For the purpose of prior art rejections, the filing date of the instant claims 47-52 and 56-59 is deemed to be the filing date of the instant application, *i.e.* 12/3/03, as the parent applications do not support the claimed limitations of the instant application as enunciated at item #6 of this Office Action supra. For the purpose of prior art rejections, the filing date of the instant claim 53 is deemed to be the filing date of the 60/061,589 parent application, *i.e.*, 10/10/97.

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims rejected 47-49, 52, 54 and 57-59 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 00/34494.

WO 00/34494 A1teaches a vector comprising a nucleic acid sequence that encodes the amino acid sequence of a target antigenic peptide such as the CAP1-6D peptide YLSGADLNL which is SEQ ID NO: 2 of the instant claims, or said nucleic acid sequence and vector further comprises a polypeptide comprising the amino acid sequence of at least three costimulatory molecules. WO 00/34494 A1 teaches kits containing recombinant vectors comprising the said nucleic acid molecules, host cell comprising the said nucleic acid molecules and vectors comprising the said nucleic acid molecules, for example avipox, suipox, capripox, vaccinia. WO 00/34494 A1 teaches a kit for use in making a recombinant poxvirus comprising a bacterial plasmid vector that comprises the said nucleic acid sequence. WO 00/34494 A1 teaches compositions comprising more than one nucleic acid sequence encoding target antigens such as CEA or CAP1-6D. WO 00/34494 A1teaches that the viral vectors comprising a tumor associated antigenic peptide may be used to stimulate an immune response *ex vivo* in autologous $CD8^+$ lymphocytes before being adoptively transferred back into the cancer patient. WO 00/34494 A1 teaches that a target antigen or epitope peptide may be provided endogenously via the vector for tumors in which the antigen is expressed at low levels or absent, the providing being either *in vivo or ex vivo*. WO 00/34494 A1 teaches that after immunization, the efficacy of the vaccine containing the vector encoding the tumor associated antigenic peptide may be assessed by the production of immune cells that recognize the antigen as assessed by cytolytic activity or cytokine production (especially abstract, page 2 at lines 17-20, Summary of the Invention on pages 4-10, page 11 at lines 1-7, page 21 at lines 18-30, page 22, page 23 at lines 1-3, page 25 at lines 18-32, page 26, page 27, page 28 at lines 1-5, pages 45-35, pages 36

at lines 20-32, page 37 at lines 1-4 and 17-20, page 39 at lines 16-32, page 40 at lines 16-32, page 41, paragraph spanning pages 42-43, and claims.)

12. Claims 47-49, 52, 54 and 57-59 are rejected under 35 U.S.C. 102(e) as being anticipated by US 2004/0019195 A1.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

US 2004/0019195 A1 discloses a vector comprising a nucleic acid sequence that encodes the amino acid sequence of a target antigenic peptide such as the CAP1-6D peptide YLSGADLNL which is SEQ ID NO: 24 of US 2004/0019195 A1 and SEQ ID NO: 2 of the instant claims, or said nucleic acid sequence and vector further comprises a polypeptide comprising the amino acid sequence of at least three costimulatory molecules. US 2004/0019195 A1 discloses kits containing recombinant vectors comprising the said nucleic acid molecules, host cell comprising the said nucleic acid molecules and vectors comprising the said nucleic acid molecules, for example avipox, suipox, capripox, vaccinia. US 2004/0019195 A1 discloses a kit for use in making a recombinant poxvirus comprising a bacterial plasmid vector that comprises the said nucleic acid sequence. US 2004/0019195 A1 discloses compositions comprising more than one nucleic acid sequence for target antigens such as CEA and CAP1-6D (see entire document especially abstract, [0001], [[0021]-[0025], [0029], [0037], [0046], [0018], [0011], [0120]-[0121], [0123], [0125], [0138], [0141], [0146], Table 1, [0157], [0166], [0172], [0176]-[0180], and claims 18,19, 26, 27, 35, 36 and 68-73).

13. Claims 47-49, 52, 54 and 57-59 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,969,609 B1.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

U.S. Patent No. 6,969,609 B1 discloses a vector comprising a nucleic acid sequence that encodes the amino acid sequence of a target antigenic peptide such as the CAP1-6D peptide YLSGADLNL which is SEQ ID NO: 24 of U.S. Patent No. 6,969,609 B1and SEQ ID NO: 2 of the instant claims, or said nucleic acid sequence and vector further comprises a polypeptide comprising the amino acid sequence of at least three

costimulatory molecules. U.S. Patent No. 6,969,609 B1 discloses kits containing recombinant vectors comprising the said nucleic acid molecules, host cell comprising the said nucleic acid molecules and vectors comprising the said nucleic acid molecules, for example avipox, suipox, capripox, vaccinia. U.S. Patent No. 6,969,609 B1 discloses a kit for use in making a recombinant poxvirus comprising a bacterial plasmid vector that comprises the said nucleic acid sequence. U.S. Patent No. 6,969,609 B1 discloses compositions comprising more than one nucleic acid sequence encoding target antigens such as CEA or CAP1-6D. U.S. Patent No. 6,969,609 B1 discloses that the viral vectors comprising a tumor associated antigenic peptide may be used to stimulate an immune response *ex vivo* in autologous $CD8^+$ lymphocytes before being adoptively transferred back into the cancer patient. U.S. Patent No. 6,969,609 B1 discloses that a target antigen or epitope peptide may be provided endogenously via the vector for tumors in which the antigen is expressed at low levels or absent, the providing being either *in vivo or ex vivo*. U.S. Patent No. 6,969,609 B1 discloses that after immunization, the efficacy of the vaccine containing the vector encoding the tumor associated antigenic peptide may be assessed by the production of immune cells that recognize the antigen as assessed by cytolytic activity or cytokine production (especially entire document especially abstract, column 1 at lines 52-67, column 2 at lines 1-67, column 5 at lines 35-42, column t at lines 7-67, column 7 at lines 1-62, column 17 at lines 27-67, column 8 at lines 1-44, column 22 at lines 32-50, column 23 at lines 5-67, column 24, column 25 at lines 1-59, paragraph spanning columns 26-27, column 27 at lines 10-67, column 28 at lines 1-44 and 55-65, claim 16).

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 47-52, 54 and 56-59 are rejected under 35 U.S.C. 103(a) as being obvious over US 2004/0019195 A1 in view of WO 91/02805 A2.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in

accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

US 2004/0019195 A1 discloses a vector comprising a nucleic acid sequence that encodes the amino acid sequence of a target antigenic peptide such as the CAP1-6D peptide YLSGADLNL which is SEQ ID NO: 24 of US 2004/0019195 A1 and SEQ ID NO: 2 of the instant claims, or said nucleic acid sequence and vector further comprises a polypeptide comprising the amino acid sequence of at least three costimulatory molecules. US 2004/0019195 A1 discloses kits containing recombinant vectors comprising the said nucleic acid molecules, host cell comprising the said nucleic acid molecules and vectors comprising the said nucleic acid molecules, for example avipox, suipox, capripox, vaccinia. US 2004/0019195 A1 discloses a kit for use in making a recombinant poxvirus comprising a bacterial plasmid vector that comprises the said nucleic acid sequence. US 2004/0019195 A1 discloses compositions comprising more than one nucleic acid sequence for target antigens such as CEA and CAP1-6D. US 2004/0019195 A1 discloses kits containing recombinant vectors comprising the said nucleic acid molecules. US 2004/0019195 A1 discloses that the CAP1-6D peptide is presented by HLA-A2 class I MHC molecule. US 2004/0019195 A1 discloses that the recombinant vectors of the invention are able to infect, transfect or transduce host cells and that the host cells may be engineered to express MHC class I molecules for appropriate presentation to $CD8^+$ T cells. US 2004/0019195 A1 discloses that CEA and antigenic CEA peptides such as CAP1-6D may be used to pulse APC and the APC are mixed with lymphoid cells to measure the CTL reactivity, or that the peptides may be used as immunogens. US 2004/0019195 A1 discloses a recombinant retrovirus vector construct that directs the expression of a target antigen, an MHC protein and other proteins involved in immune interactions that are missing or under-represented in a target cell (see entire document especially abstract, [0001], [0004], [[0021]-[0025], [0029], [0037], [0046], [0018], [0011], [0120]-[0121], [0123], [0125], [0138], [0141], [0146], Table 1, [0157], [0166], [0172], [0176]-[0180], [0190], and claims 18,19, 26, 27, 35, 36 and 68-73).

US 2004/0019195 A1 does not disclose wherein the vector further comprises a nucleotide sequence encoding an HLA-A2 molecule, nor wherein the host cell comprises the resulting HLA-A2 encoding vector.

WO 91/02805 A2 teaches transfecting tumor cells with a recombinant viral vector construct that directs expression of both a tumor antigen or portion thereof and an MHC protein such as an MHC class I protein that is capable of presenting the tumor antigen or portion thereof in order to stimulate CTL in a subject animal. WO 91/02805 A2 teaches that this is advantageous in augmenting antigen presentation in tumor cells that have reduced levels of MHC proteins and a reduced ability to stimulate an immune response (especially Summary of the Invention on pages 5-7 (through line 29)).

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have engineered the vector comprising the nucleic acid sequence encoding the CAP1-6D antigenic peptide disclosed by US 2005/0101559 A1 to have further comprised a nucleotide sequence encoding the HLA-A2 MHC class I molecule disclosed by US 2004/0019195 A1 capable of binding the CAP1-6D antigenic peptide, similar to the teaching of WO 91/02805 A2 of making a vector capable of directing expression of both antigenic peptide(s) and/or proteins and the class I MHC molecule that presents them, to have transfected tumor or other host cells with the construct as taught by both references.

One of ordinary skill in the art at the time the invention was made would have been motivated to do this because US 2004/0019195 A1 discloses that host cells may be transfected with both the CAP1-6D encoding nucleic acid molecule containing vector and the HLA-A2 MHC class I molecule, and both US 2004/0019195 A1 and WO 91/02805 A2 teach that it is advantageous to make a vector that encodes both the peptide and the HLA molecule that presents it and to transfect host cells, including tumor cells, using the vector in order to augment antigen presentation in tumor cells, and because US 2004/0019195 A1 discloses that the recombinant vectors of the invention are able to infect, transfect or transduce host cells and that the host cells may be engineered to express MHC class I molecules for appropriate presentation to $CD8^+$ T cells.

In addition, the motivation to combine can arise from the expectation that the prior art elements will perform their expected functions to achieve their expected results when combined for their common known purpose. Section MPEP 2144.07.

16. Claims 47-52, 54 and 56-59 are rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 6,969,609 B1 in view of WO 91/02805 A2.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

U.S. Patent No. 6,969,609 B1 discloses a vector comprising a nucleic acid sequence that encodes the amino acid sequence of a target antigenic peptide such as the CAP1-6D peptide YLSGADLNL which is SEQ ID NO: 24 of U.S. Patent No. 6,969,609 B1and SEQ ID NO: 2 of the instant claims, or said nucleic acid sequence and vector further comprises a polypeptide comprising the amino acid sequence of at least three costimulatory molecules. U.S. Patent No. 6,969,609 B1 discloses kits containing recombinant vectors comprising the said nucleic acid molecules, host cell comprising the said nucleic acid molecules and vectors comprising the said nucleic acid molecules, for example avipox, suipox, capripox, vaccinia. U.S. Patent No. 6,969,609 B1 discloses a kit for use in making a recombinant poxvirus comprising a bacterial plasmid vector that comprises the said nucleic acid sequence. U.S. Patent No. 6,969,609 B1 discloses compositions comprising more than one nucleic acid sequence for target antigens such as CEA and CAP1-6D. U.S. Patent No. 6,969,609 B1 discloses that the viral vectors comprising a tumor associated antigenic peptide may be used to stimulate an immune response *ex vivo* in autologous $CD8^+$ lymphocytes before being adoptively transferred back into the cancer patient. U.S. Patent No. 6,969,609 B1 discloses that the CAP1-6D peptide is presented by HLA-A2 class I MHC molecule. U.S. Patent No. 6,969,609 B1 discloses that a target antigen or epitope peptide may be provided endogenously via the vector for tumors in which the antigen is expressed at low levels or absent, the providing being either *in vivo or ex vivo*. U.S. Patent No. 6,969,609 B1 discloses that after immunization, the efficacy of the vaccine containing the vector encoding the tumor associated antigenic peptide may be assessed by the production of immune cells that recognize the antigen as assessed by cytolytic activity or cytokine production (see entire document especially abstract, column 1 at lines 52-67, column 2 at lines 1-67, column 5 at lines 35-42, column t at lines 7-67, column 7 at lines 1-62, column 17 at lines 27-67, column 8 at lines 1-44, column 22 at lines 32-50, column 23 at lines 5-67, column 24, column 25 at lines 1-59, paragraph spanning columns 26-27, column 27 at lines 10-67, column 28 at lines 1-44 and 55-65, claim 16).

US 2004/0019195 A1 does not disclose wherein the vector further comprises a nucleotide sequence encoding an HLA-A2 molecule, nor wherein the host cell comprises the resulting HLA-A2 encoding vector.

WO 91/02805 A2 teaches transfecting tumor cells with a recombinant viral vector construct that directs expression of both a tumor antigen or portion thereof and an MHC protein such as an MHC class I protein that is capable of presenting the tumor antigen or portion thereof in order to stimulate CTL in a subject animal. WO 91/02805 A2 teaches that this is advantageous in augmenting antigen presentation in tumor cells that have reduced levels of MHC proteins and a reduced ability to stimulate an immune response (especially Summary of the Invention on pages 5-7 (through line 29)).

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have engineered the vector comprising the nucleic acid sequence encoding the CAP1-6D antigenic peptide disclosed by U.S. Patent No. 6,969,609 B1 and to have further comprised a nucleotide sequence encoding the HLA-A2 MHC class I molecule disclosed by U.S. Patent No. 6,969,609 B1 capable of binding the CAP1-6D antigenic peptide, similar to the teaching of WO 91/02805 A2 of making a vector capable of directing expression of both antigenic peptide(s) and/or proteins and the class I MHC molecule that presents them, to have transfected tumor or other host cells with the construct as taught by both references.

One of ordinary skill in the art at the time the invention was made would have been motivated to do this because U.S. Patent No. 6,969,609 B1 discloses that host cells may be transfected with both the CAP1-6D encoding nucleic acid molecule containing vector and the HLA-A2 MHC class I molecule, and both U.S. Patent No. 6,969,609 B1 discloses and WO 91/02805 A2 teaches that it is advantageous to make a vector that encodes both the peptide and the HLA molecule that presents it and to transfect host cells, including tumor cells, using the vector in order to augment antigen presentation in tumor cells, and because U.S. Patent No. 6,969,609 B1 discloses that the recombinant vectors of the invention are able to infect, transfect or transduce host cells and that the host cells may be engineered to express MHC class I molecules for appropriate presentation to $CD8^+$ T cells.

In addition, the motivation to combine can arise from the expectation that the prior art elements will perform their expected functions to achieve their expected results when combined for their common known purpose. Section MPEP 2144.07.

17. Claims 47-52, 54 and 56-59 are rejected under 35 U.S.C. 103(a) as being obvious over WO 00/34494 A1in view of WO 91/02805 A2.

WO 00/34494 A1 teaches a vector comprising a nucleic acid sequence that encodes the amino acid sequence of a target antigenic peptide such as the CAP1-6D peptide YLSGADLNL which is SEQ ID NO: 2 of the instant claims, or said nucleic acid sequence and vector further comprises a polypeptide comprising the amino acid sequence of at least three costimulatory molecules. WO 00/34494 A1 teaches kits containing recombinant vectors comprising the said nucleic acid molecules, host cell comprising the said nucleic acid molecules and vectors comprising the said nucleic acid molecules, for example avipox, suipox, capripox, vaccinia. WO 00/34494 A1 teaches a kit for use in making a recombinant poxvirus comprising a bacterial plasmid vector that comprises the said nucleic acid sequence. WO 00/34494 A1 teaches compositions comprising more than one nucleic acid sequence for target antigens such as CEA and CAP1-6D. WO 00/34494 A1 teaches that the viral vectors comprising a tumor associated antigenic peptide may be used to stimulate an immune response *ex vivo* in autologous $CD8^+$ lymphocytes before being adoptively transferred back into the cancer patient. WO 00/34494 A1 teaches that a target antigen or epitope peptide may be

provided endogenously via the vector for tumors in which the antigen is expressed at low levels or absent, the providing being either *in vivo or ex vivo*. WO 00/34494 A1 teaches that after immunization, the efficacy of the vaccine containing the vector encoding the tumor associated antigenic peptide may be assessed by the production of immune cells that recognize the antigen as assessed by cytolytic activity or cytokine production (especially abstract, page 2 at lines 17-20, Summary of the Invention on pages 4-10, page 11 at lines 1-7, page 21 at lines 18-30, page 22, page 23 at lines 1-3, page 25 at lines 18-32, page 26, page 27, page 28 at lines 1-5, pages 45-35, pages 36 at lines 20-32, page 37 at lines 1-4 and 17-20, page 39 at lines 16-32, page 40 at lines 16-32, page 41, paragraph spanning pages 42-43, and claims.)

WO 00/34494 A1does not teach wherein the vector further comprises a nucleotide sequence encoding an HLA-A2 molecule, nor wherein the host cell comprises the resulting HLA-A2 encoding vector.

WO 91/02805 A2 teaches transfecting tumor cells with a recombinant viral vector construct that directs expression of both a tumor antigen or portion thereof and an MHC protein such as an MHC class I protein that is capable of presenting the tumor antigen or portion thereof in order to stimulate CTL in a subject animal. WO 91/02805 A2 teaches that this is advantageous in augmenting antigen presentation in tumor cells that have reduced levels of MHC proteins and a reduced ability to stimulate an immune response (especially Summary of the Invention on pages 5-7 (through line 29)).

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have engineered the vector comprising the nucleic acid sequence encoding the CAP1-6D antigenic peptide disclosed by WO 00/34494 A1 to have further comprised a nucleotide sequence encoding the HLA-A2 MHC class I molecule disclosed by WO 00/34494 A1capable of binding the CAP1-6D antigenic peptide, similar to the teaching of WO 91/02805 A2 of making a vector capable of directing expression of both antigenic peptide(s) and/or proteins and the class I MHC molecule that presents them, to have transfected tumor or other host cells with the construct as taught by both references.

One of ordinary skill in the art at the time the invention was made would have been motivated to do this because WO 00/34494 A1 teaches that host cells may be transfected with both the CAP1-6D encoding nucleic acid molecule containing vector and the HLA-A2 MHC class I molecule, and both WO 00/34494 A1and WO 91/02805 A2 teach that it is advantageous to make a vector that encodes both the peptide and the HLA molecule that presents it and to transfect host cells, including tumor cells, using the vector in order to augment antigen presentation in tumor cells, and because WO 00/34494 A1 teaches that the recombinant vectors of the invention are able to infect, transfect or transduce host cells and that the host cells may be engineered to express MHC class I molecules for appropriate presentation to $CD8^+$ T cells.

In addition, the motivation to combine can arise from the expectation that the prior art elements will perform their expected functions to achieve their expected results when combined for their common known purpose. Section MPEP 2144.07.

18. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).
Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

19. Claims 47-49 and 57-59 are provisionally rejected under the judicially created doctrine of double patenting over claims 18, 19, 26, 27 and 35 of copending Application No. 10/406,317. Although the conflicting claims are not identical, they are not patentably distinct from each other because the vector of instant claims 48 and 49 are nucleic acids that comprise the nucleic acid of instant claim 47, and the vector of '317 is also a nucleic acid that comprises a nucleic acid that comprises a nucleic acid sequence encoding SEQ ID NO: 2 of the instant claims (SEQ ID NO: 24 of '317). Also, although the vector of the '317 claims 18, 19, 26 and 27 also comprise additional coding sequences, the said vector comprises a nucleic acid molecule that encodes SEQ ID NO: 2. Instant claim 49 is included in this rejection because the poxviruses orthopox, avipox, capripox and suipox are obvious variants of vector as evidenced by claims 11 and 14 of '317. Instant claims 58 and 59 are included in this rejection because they are encompassed by the composition recited in claim 35 of '317, and the composition comprising the vector comprises the nucleic acid molecule encoding a tumor antigen of the claim 35 of '317.

This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

20. Claims 50-52, 54 and 56 are provisionally rejected under the judicially created doctrine of double patenting over claims 18, 19, 26, 27 and 35 of copending Application No. 10/406,317 as applied to claims 47-49 and 57-59 above, and further in view of US 6,319,496 B1 and WO 91/02805 A2.

The claims 18, 19, 26, 27 and 35 of copending Application No. 10/406,317 do not recite wherein the vector further comprises a nucleotide sequence encoding HLA-A2 and is comprised in a host cell or kit.

US 6,319,496 B1 discloses making suipox, avipox, capripox or orthpox viral vectors comprising a nucleic acid sequence encoding CEA or one of the CAP-1-CAP10 peptides and a host cell comprising said vector, and that HLA-A2 is the restriction element for the CAP1-CAP-10 peptides, and that tumor cells that express HLA-A2 were capable of presenting the peptides (especially column 3 at lines 1-13, column 4 at lines 45-65, abstract).

WO 91/02805 A2 teaches transfecting tumor cells with a recombinant viral vector construct that directs expression of both a tumor antigen or portion thereof and an MHC protein such as an MHC class I protein that is capable of presenting the tumor antigen or portion thereof in order to stimulate CTL in a subject animal. WO 91/02805 A2 teaches that this is advantageous in augmenting antigen presentation in tumor cells that have reduced levels of MHC proteins and a reduced ability to stimulate an immune response (especially Summary of the Invention on pages 5-7 (through line 29)).

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have constructed the viral vector of claims 18, 19, 26, 27 and 35 of '317 to further comprise nucleic acid sequence encoding HLA-A2 as per the teaching of WO 91/02805 A2 of making a recombinant viral vector that directs expression of both a tumor antigen or peptide thereof and the MHC class I protein that presents it, and to have transfected host cells as per the disclosure of US 6,319,496 B1 for other CAP antigenic peptides or the teaching of WO 91/02805 A2 for other tumor peptides and to have placed the said vector into a kit.

One of ordinary skill in the art at the time the invention was made would have been motivated to do this because '317 teaches a vector comprising nucleic acid encoding the CAP1-6D peptide analog, and US 6,319,496 B1 discloses transfecting host cells with vectors encoding CAP antigenic peptide(s), and making compositions comprising the nucleic acid molecules. One of ordinary skill in the art at the time the invention was made would have been motivated to put the resulting vector in a kit for ease of use in transforming host cells such as per the disclosure of US 6,319,496 B1 of using a vector encoding the antigenic peptide to transfect a host cell. In addition, one of ordinary skill in the art at the time the invention was made would have been motivated to do this in order to transfect tumor cells that had down-regulated their HLA-A2 molecules to evade detection because WO 91/02805 A2 teaches making a recombinant viral vector that

directs expression of both a tumor antigen or peptide thereof and the MHC class I protein that presents it in order to augment antigen presentation in tumor cells.

This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

21. Claims 47-52, 54 and 56-59 are directed to an invention not patentably distinct from claims 18, 19, 26, 27 and 35 of commonly assigned application serial no. 10/406,317, as enunciated at items # 19 and #20 supra.

22. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302). Commonly assigned 10/406,317, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications filed on or after November 29, 1999.

23. Claim 51 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 16 of U.S. Patent No. 6,969,609 B1 in view of US 6,319,496 B1 and WO 91/02805 A2.

Claim 16 of '609 does not recite wherein the host cell comprises a vector that further comprises nucleic acid sequence encoding the HLA-A2 class I MHC molecule in addition to the CAP1-6D peptide from CEA (SEQ ID NO: 2 of the instant application).

US 6,319,496 B1 discloses making suipox, avipox, capripox or orthpox viral vectors comprising a nucleic acid sequence encoding CEA or one of the CAP-1-CAP10 peptides and a host cell comprising said vector, and that HLA-A2 is the restriction element for the CAP1-CAP-10 peptides, and that tumor cells that express HLA-A2 were capable of presenting the peptides (especially column 3 at lines 1-13, column 4 at lines 45-65, abstract).

WO 91/02805 A2 teaches transfecting tumor cells with a recombinant viral vector construct that directs expression of both a tumor antigen or portion thereof and an MHC protein such as an MHC class I protein that is capable of presenting the tumor antigen or portion thereof in order to stimulate CTL in a subject animal. WO 91/02805 A2 teaches that this is advantageous in augmenting antigen presentation in tumor cells that have reduced levels of MHC proteins and a reduced ability to stimulate an immune response (especially Summary of the Invention on pages 5-7 (through line 29)).

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have constructed a vector that also encodes HLA-A2 as per the disclosure of US 6,319,496 B1 that HLA-A2 is the restriction element for CAP1 peptides, and as per the teaching of WO 91/02805 A2 that it is advantageous to transfect a tumor cell with a recombinant viral vector that directs expression of both a tumor antigenic peptide and its MHC restricting element in order to stimulate an augmented immune response. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have constructed the host cell of claim 16 of '609 to further comprise the vector that also encodes HLA-A2 in order to construct a host cell that is capable of presenting the CAP1-6D peptide in order to test the response of CTL from peripheral blood of cancer patients who receive the vector *in vivo* in order to augment their immune response to CEA.

One of ordinary skill in the art at the time the invention was made would have been motivated to do this in order to augment the immune response to the CAP1-2D peptide encoded in the host cell of '609, as per the disclosure of '496 that HLA-A2 expressing cells were capable of presenting the said peptide, and as per the teaching of WO 91/02805 A2 of transfecting both the tumor peptide and the HLA restricting molecule together to augment an immune response.

24. Claim 51 is directed to an invention not patentably distinct from claim 16 of commonly assigned US Patent No. 6,969,609 B1 as enunciated at item #18 of this action supra.

25. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned US Patent No. 6,969,609 B1, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

26. Claim 56 is objected to because of the following informality: Claim 56 has two sets of identical claim numbers. Appropriate correction is required.

27. No claim is allowed.

28. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Marianne DiBrino whose telephone number is 571-272-0842. The Examiner can normally be reached on Monday, Tuesday, Thursday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Christina Y. Chan, can be reached on 571-272-0841. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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